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THE PRICE-FIXING OF COPPER

SUMMARY

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GOVERNMENT price-fixing in this country has been a widely established practice in connection with our public service companies where the state grant of a franchise creates a legal or virtual monopoly, and also a duty to assure for its citizens uniformity of rates and protection against extortion. In recent years the exercise of these rights was taken over in part by the federal government, under its constitutional power to control commerce, and Congress gave to the Interstate Commerce Commission power to adjust and establish transportation rates. With the advent of war, however, the federal government was under the necessity of creating new machinery to marshall the nation's resources. The enormous powers given for this end have since the declaration of war become almost unlimited, and authority has been delegated to many persons in the name of the President. How far-reaching the industrial consequences of this control are, may be suggested by the fact that during the past eighteen months of war, prices as fixed cover the whole field of metals, chemicals, lumber, and other building materials, cotton and woolen textiles, wool, hides, and leather.

Price-fixing under present conditions signifies now a price determined to the consumer by a government at war, for a commodity deemed necessary for the winning of the war. In the case of copper, the United States, September 21, 1917, named a maximum price which was declared to be the one price f. o. b. New York, at which "supply" as produced, and subject to transportation adjustments, was to be available to all, including the government itself and the Allies, their civilians, and our own. It also provided against reduction of wages, which were then at their highest level. There was little copper for neutrals, and for them no price was fixed, tho such small sales as have been made were effected at the government price. Since August 30, 1918, the price fixed has not applied to civilians except in this country. There has been one advance from 23½ cents to 26 cents, and the price is now made f. o. b. cars or lighters at eastern refineries, f. o. b. cars or lighters at Pacific coast refineries for Pacific coast destinations, and f. o. b. cars or lighters New York, if shipped to eastern or interior destinations from Pacific coast refineries and from refineries in the interior of the United States. Present conditions including those in force as above, further provide that all shipments made after the period as fixed shall be subject to any change in price as determined by the Price-Fixing Committee, that all producers agree to take the necessary measures under the direction of the War Industries Board to prevent copper as distributed, from falling into the hands of speculators, who might increase the price to the public; and lastly that the producers pledge themselves to exert every effort necessary to keep up the output of copper so as to insure an adequate supply so long as the war lasts. Certain charges in excess of the maximum price, which however are here not important, were determined by the

Price-Fixing Committee on June 5, 1918, and concern copper shapes as delivered from the refineries.

Once a price is established, the same necessity that forces this step, also requires the government, sooner or later, to take responsibility for the regulation of distribution by a system, if need be, of priorities, rationing, and licensing. Price-fixing and priorities seek to prevent all private speculation and hoarding, and to control consumption by direction of both supply and demand. Further, the fixing of prices of any commodity makes necessary, gradually perhaps, but surely in the end, the determination of costs and profits, and so of prices for all stages of the production, from the raw material to the finished product, and from the producer to the consumer. There should be reasonable costs and profits for each stage. Up to the present time the practice of determination in our government price-fixing by the War Industries Board leaves to individual companies their extraordinary earnings which are due sometimes to the efficiency of their personal staffs, and again to the advantageous control of processes of production or of natural resources. Such extra earnings are then subject to an excess profits tax. With the copper industry, however, only two prices have yet been fixed for *refined copper*, first 23½ cents and then 26 cents. This government determination as to copper is an example of price-fixing in its simplest form.

Our government by its policy has successfully avoided legal complications. With fair adjustments and through the response of patriotism, yet also by the threat or act of commandeering, it has made workable its plan for *direction of industry* through *voluntary coöperative* price-fixing. There is no legal price-fixing authority except under the Lever Act for wheat and coal. These coöperative agreements with producers are made with duress in the background; government duress being possible in the form of railway and fuel discrimination, priorities, licensing, or finally commandeering. Government direction of industry by these means is justified only as it stabilizes the industrial structure, eliminates profiteering, secures adequate production and the absolute control that the necessities of war require. Such enormous powers, increased as they are now by the Overman Act, and incapable of attaining more than approximate justice, require for their administration not men who will use so-called " political " methods, but men of high moral vision and recognized business experience.

Copper has been proved a metal of primary necessity to nations at war. Governments for their war needs create a new demand backed by unlimited and unquestioned buying power, which makes price-fixing inevitable. The enormous needs of the Allies were only to be met by concentrated buying from all selling agencies, and this buying was so urgent that any withholding against these large orders would have led to trade chaos with wide upward fluctuations. Even before our entry into the great conflict on April 6, 1917, the large producers and selling agencies had themselves found it impossible to meet trade conditions without at first from month to month, and finally in 1916 during most of the year, establishing for export sales an almost uniform price. During 1915 the rapid spending of money for copper raised, by monthly stages, the export price from 13 to 22 cents, while after February, 1916, this export price held between 26½ and 28 cents. From our entry into the war copper was one of the commodities first to have its price fixed for the government.

Copper as a metal combines easily with thirty-six other elements, is used as a component in hundreds of alloys, many having established trade names, and is thus in very many ways industrially essential. It is in truth our best metal commercially, and in war times is without an effective substitute. Military demands that force high prices for copper are coincident with other war demands for essential materials, and with increasing prices for all possible substitutes. Aluminum, for example, was from the very first, almost entirely requisitioned for use, directly or indirectly, in manufactured products necessary for government purposes. In uses where copper is indestructible, as in telegraphy, telephoning, ship, engine and other motor building, locomotives and railroad work, the war requirements are at first very heavy. War business and our own installations for defense at home, call for very large supplies at once, and this great increase in demand must continue for some time to come. Lord Northcliffe's prediction, made over a year ago, is already far along in its process of fulfillment. His prophecy was that before the war's end, we should build several cities in France to care for repairs, for the assembling and reconstruction of equipment, and for the manufacturing of munitions. In munitions copper is destructible and there is a large annual and absolute loss. One-third of the copper used goes into fixed and semi-fixed artillery ammunition, where foreign experience has shown savings of about 80 per cent. Were a minimum of 5 per cent assured on all other artillery ammunition, including also small arms, there would be a total salvage of at least 30 per cent. As organization is bettered this percentage can be increased. United States government specifications, for example, require cartridges to stand twenty reloadings. Moreover, invention is bringing into use new, effectual, and lasting economies. Once these detailed readjustments are made, new construction completed and the necessary surpluses accumulated, renewal demands will follow in a much lesser degree. If England's present experience may be our criterion as to stocks needed on hand for the prosecution of the war, there will remain, upon the cessation of the fighting, for all these uses, from motor vehicle parts to sixteen-inch shells, large accumulations of supplies — reserves for from ten to eighteen months, which at all times it has been deemed necessary to carry. But during the war the net result must be a very slow but nevertheless continuous accumulation of copper tending toward market saturation, when once the large program of construction is approximately completed and the man-power of the nations at the front has reached its maximum. Until the end, therefore, war demands must be urgent and not only discount present needs but also a long future.

As an industry copper production is in many ways unique, and its price-fixing problems essentially different from those of most other industries. In the agencies of production and distribution there has been far-reaching concentration. Much time and considerable sums of money are necessary to create a copper mine with a large output. After copper ore is once located, the equipment of the mine, the establishing of necessary railroad connections and the building of reduction works require not only millions of dollars of capital but also, under normal conditions as experience records, a probable minimum of five years for development. The Kennecott Copper Company, a most extreme instance, spent more than $20,000,000 before railroad transportation along the banks of the Copper River was even begun; and it is such development expenditures as this that must be risked, and within the life of the mine liquidated with interest. For the sake of suggesting proportion, and as roughly establishing Nature's part, it may be said that the purchase price of the located ore body is to the cost of this necessary development construction, as one to one hundred, before a really large producing mine with profits available for dividends is secured. Increases come mainly from the large mines. This is further shown by the fact that, with 79.6 per cent more mines in the United States in 1916 than in 1913, more than 70 per cent of the increased production of the latter year came from mines of more than 10,000,000 pounds annual production, while the percentage from mines of less than 1,000,000 pounds production was but 3.55 per cent. As a mineral, copper is found in all our states except Florida. A list, however, of four hundred copper mines will include every mine throughout the entire world which produces in a year more than 200,000 pounds, or an annual gross value now for its product f. o. b. New York of approximately $50,000. After three-quarters of a century of development in this important industry, there are within the United States eighteen hundred and forty-eight mines producing copper. Of this number in 1916, the year of largest efficiency, thirty-one mines produced more than 85 per cent of the output, or 1,711,395,262 pounds, while less than 295,000,000 pounds were obtained from the remainder, or an average of 160,000 pounds to a mine.

Smelting and refining show within the industry still further concentration. In 1916, twenty-seven companies controlling thirty-six smelters in the United States produced more than 2,000,000,000 pounds of electrolytic copper. Refining capacity cares for imported as well as domestic ores, and in the United States exceeds smelting capacity. The refineries in 1916 treated more than 450,000,000 pounds additional from foreign sources. Six companies controlling ten refineries in the United States had a developed capacity in 1917 of 2,780,000,000 pounds; while two of the refining groups handling their own and custom ore, had respectively an output of more than 750,000,000 and of 1,000,000,000 pounds a year. In smelting and refining, new processes, some of which are patented, are bringing great changes which tend to strengthen the few large companies. Flotation and treatment by leaching are the recent material advances in saving metal heretofore usually lost, and the increasing use of these discoveries may soon lead to the superseding of our great copper smelters. By the flotation process about 27,000,000 tons of copper are annually treated. A single company, the Minerals Separation North American Corporation controls patents which have been for a long time in litigation, at a cost to date of probably more than two million dollars. The rights under these patents ought soon, for the sake of the industry, to be determined finally by adjudication in the United States Supreme Court. The process is of enormous value in the treatment of base metal ores like zinc and copper, and is as great an advance for this industry as the cyanide process has been for gold.

Four selling agencies in 1916 handled almost 80 per cent of all the refined copper sold in this country for domestic and foreign consumption, and more than 66 per cent of the world production. The increase of 62.3 per cent in the United States output of copper from 1914 to 1916, coming so largely from mines with an annual production of more than 10,000,000 pounds has steadily made for concentration which has been secured with only small additions to capital obligations. Today the entire industry represents an American investment of approximately one and a half billion dollars. Its product for example is in wide contrast with coal, in that refined copper is practically the same in quality the country over; is sold in the trade f. o. b. as of New

York with freight adjustments; and in this price are included all the transportation costs from the mine to the refinery. While copper can be entirely withdrawn from all but war uses, coal is essential to every one and its conservation must everywhere be enforced upon consumers through nation-wide control of output and distribution. Because copper is so far a primary necessity of war, and because the American copper industry is so unified, and withal represents so large a proportion of the world production, copper, its output and its market, must be studied from the beginning of the great war, if the necessity for our own government action and its effectiveness is to be understood and justified.

The copper market problem of 1914 and 1915 was the familiar one of adjustment of supply and demand, but during the last six months of 1914, because of the world-wide industrial paralysis due to the war, it was one of adjustment of supply to a *minimum* demand. Domestic deliveries in normal times exceed exports, but for three years, 1911–13, the domestic deliveries failed to equal the foreign, and the average excess of exports was at the rate of 1 per cent a year. The exports for eighteen months, to June 30, 1914, however, were almost 25 per cent in excess of domestic deliveries; and of the total of 1,358,000,000 pounds exported from the United States, 827,000,000 pounds, almost wholly for German consumption, were shipped to Holland and to Germany. The increasing momentum of this export movement, and the contrasted domestic minimum of demand, are shown by the fact that foreign deliveries in the first six months of 1914 were 489,000,000 pounds, an excess of 48 per cent over domestic deliveries, which were 330,000,000 pounds. Electrolytic copper, the standard grade of copper in the United States, sold in New York in June and July before war was declared, at the lowest price since December, 1911. While general business in the United States at this time was at a low ebb, German prosperity, if copper imports were its true measure, was at its height. But now it can be recognized that German manipulation for the purposes of accumulation was the large factor which depressed prices. Until this time and for a generation German interests had dominated the metal output of the world.

The beginning of the present war suddenly cut down demand still further. Copper circles had to repeat the trade experience of 1908–10 when demand had fallen sharply. Copper for three years had remained at the low average of 13⅛ cents a pound. By this experience the trade finally and fully learned that widely fluctuating and abnormally high prices are a real damage, and that to keep on producing when consumption is below normal means demoralization of the market through huge surpluses which depress values until low prices enable the floating supply to be absorbed. An increase in smelter production in 1912 of 13.3 per cent was followed in 1913 by a decrease of 1.5 per cent, but the output of the refineries continued to increase and 1913 exceeded 1912 by more than 25 per cent. In 1914 through June, refinery production again increased at the rate of 3 per cent, or to a total of almost 140,000,000 pounds a month. However, the smelter production of 1914 had shown a loss of more than half of the 1912 increase of 13.3 per cent. Large foreign consumption and some pre-war absorption for later war needs, had nevertheless carried the world's visible supply in October, 1913, down to 90,000,000 pounds, the lowest since the figures of the Copper Producers Association were first issued in 1909. These trade factors were in the main without effect in changing the downward trend of prices. New low levels of proven cost for production by the porphyries, and the increasing output of these so-called low grade mines, were further depressing to the market and unsettling to confidence. The Copper Producers Association's figures, and their authoratative publicity had been without any significant effect in adjusting supply to demand. As a consequence of the general industrial paralysis following upon the declaration of war, publicity of figures was discontinued, and the trade accepted the absolute dependence of the United States as a producing country, on protective and positive measures for adjusting supply to demand.

Decisive steps for curtailment were taken, and some mines improved the opportunity to make large alterations and new installations. Opinion was almost unanimous that it was better to assure *fair* prices on *moderate* output — an output which is not excessive in proportion to demand — than *low* prices on *excessive* production; that it was better to store copper in the ground until future industries required resumption of mining, than to sell at a small margin of profit or even no profit. A large producer used to say, " the difference between a good and a bad copper market is a difference of 5 per cent in supply." In truth, experience has taught that copper is a product involving too large quantities to be stored anywhere else than in the ground. The " vein mine group," as contrasted with the porphyries, acted promptly. Curtailment was radically forced. Even refinery production, which is not at once affected by the action of the mines, and which had been steadily increasing, except for 1.5 per cent shrinkage in 1911, averaged in the last six months of 1914, 30,000,000 pounds a month less than the monthly production of the first half of the year, or a decrease of more than 22 per cent. Shrinkage in imports was a factor. This curtailment, however, was offset by demoralization at home and abroad. War demands were slow in absorbing supplies on hand, increased as they were by large existing stocks of old copper and scrap. Prices generally tended downward, and electrolytic reached its lowest monthly average, 11.40 cents, in October of 1914.

Market conditions recovered from their demoralization slowly. It was January, 1915, before prices were above 13.49 cents and so above the pre-war level, and June before imports had recovered. The foreign visible supply, having from the beginning of the war increased 25 per cent, began in July to decline, and in December exports exceeded those of July, 1914. Domestic deliveries, after the first six months of the war, began rapidly to increase, and were estimated for 1915, at 1,043,000,000 pounds, a gain of 425,000,000 pounds over 1914, or a 68 per cent increase, after the drop in 1914 of 23 per cent from the 1913 figures. There must be added to this large gain in consumption the increase in the refined product from " secondary copper," which amounted in 1915 to 140,000,000 pounds. The major trade factors in 1915 were the increased domestic deliveries of more than 565,000,000 pounds of copper; the loss, to a market long supported by foreign buying, of the export trade with the Central Powers, or approximately 450,000,000 pounds; and the evident manipulation of the London market, for " standard." If the purpose of the manipulation during this period could be fully shown, it would appear that intelligent effort was steadily made to regulate the prices of copper as well as of other materials before placing large orders in this country, for *prices* were fundamentally related to war contracts. The handling of the market also proved conclusively that export values were as long as possible kept stable, while the domestic market was intentionally left to take the shocks and slams of fluctuating demand

and its exaggerating accompaniment, speculation. Exports from the United States fell off 25 per cent, and England imported almost 10 per cent less than in the previous year, yet imports to France, Italy, and Russia from the United States increased more than 75 per cent, and of our total exports these countries took more than 60 per cent. The price variation on exports was from 13 to 22 cents. For these reasons, with the needs of so many warring nations to be measured, copper statistics were confusing, and unintelligible except to the large American agencies which were acting for the Allies in the placing of war orders.

The advance in prices that began in October of 1914 continued throughout 1915. Into our market, at the very beginning of the war, came an enormous buying power to be used for the purchase of supplies. England had wide general credit in this country, and the French government, through borrowings and by actual deposits of gold increased very largely its banking credit. The extensive purchases of copper were handled in such a manner as not to force a rapid market rise of price, but so as to restrain buying, and with very remarkable success kept the market from becoming erratic or excited. On the 15th of January, 1915, Morgan & Company made public announcement of the fact that they had become the commercial agents of the British government in directing the purchase of supplies in the United States. At a later date they accepted similar responsibilities for France, and their purchases early in 1915 were reported as averaging $10,000,000 a day. With this buying power concentrated in American agencies, it is significant that there followed in March of 1915 President Wilson's announcement, in connection with the Webb Bill, in which steel and copper producers were vitally concerned, that the administration was not averse to the combination of American interests to further foreign trade. Shortly after, in May, a trade paper stated that "Great Britain was in control of the world's copper supply outside of Germany," negotiations having been for some time in progress, with the expectation of controlling the output of the large American producers. The fact is that the monthly average prices of copper advanced without reaction, and on good news as well as on bad, until July, 1915, when after a slight recession from 19.71 cents to 17.22 cents, they rose in December, 1915, to more than 20 cents. Speculatively, copper in June sold up almost to 20 cents, discounting after almost a year of war, the probability that in spite of many factors of uncertainty, consumption would overtake available supply. The speculative forecast became a reality in December. For the first time in history American producers had enjoyed an advance in prices starting with a production many millions of pounds below normal. The demand for copper was enormous, and constantly increasing not only in the usual industries — electric transmissions, brass manufacture, castings — but for motor vehicles, munitions of war, and for the various needs in connection with the operations of the steel mills. There was no domestic business of consequence requiring the use of additional copper in hardware, building supplies, and furniture. Government orders and war needs had, by the end of 1915, very largely reconstituted the "demand," and the "supply" was thereafter to be the utmost that American resources could produce. The mistake in this period for the foreign buyer was his failure to contract for supplies well into the future. By the end of 1915 the market had passed from the control of the buyer and was dominated by the large selling agencies which, in their turn to prevent a runaway market, sought to dictate the distribution of copper and a steady price.

From December, 1915, to February, 1916, there was from the December average of 20.35 cents a rise of more than 7 cents, and except for one month, prices did not react below 27.35 cents until July, 1917, a period of eighteen months. Copper companies had so far sold their 1915 production that there were practically no spot copper and almost no futures available for the first quarter of 1916. The large purchases of manufactured copper in the United States were being financed by foreign governments especially to guarantee deliveries. Just at the close of 1915, December 22, the Anaconda Copper Company sold 120,000,000 pounds of copper at 22 cents, and thereupon apportioned the amount among the largest selling agencies in New York. This was the first announced sale in which American interests publicly acted together and divided an order. To allay trade fears it was at once stated that the large producers were determined to keep metal prices at a reasonable figure, and that attempts to sell copper at a price which was regarded by them as exorbitant, would be discouraged. The producers' helplessness, notwithstanding this expression of trade determination, is shown by the fact that in 1916 the average monthly prices per pound for copper were more than ten cents above the average for 1915, and within forty-five days after the Anaconda sale, copper sold above 27 cents. Had the market been left to itself and freely subject to supply and demand, intensified by the speculation usually incident to a rise, copper would have commanded famine prices with violent fluctuations. Voluntary self-determination of the trade as to price and distribution — distribution being as far as possible based on actual consumption — for a time accomplished much toward establishing stability but could not itself control the working of economic forces.

The year 1916 was in many ways a maximum year to date. Production of refined copper in the United States was 1,927,000,000 pounds, an increase over 1915 of 38.9 per cent, while the gain in 1915 over 1914 had already been 20.7 per cent. The monthly and yearly average of prices was the highest since 1873. But the most striking feature of the year was the phenomenal increase of consumption in the United States because of foreign business placed here in manufactures. Twenty-one domestic concerns, according to a trade paper, used in 1916 more than one and one-half billion pounds of copper. The foreign orders were the largest ever known, and sales, with approximate prices, including the one by the Anaconda Copper Company in December, 1915, were as follows: to Great Britain, December, 1915, 120,000,000 pounds, at 22 cents; to France, March, 1916, 100,000,000 pounds at 27 cents; to Great Britain, April, 300,000,000 pounds at 27½ cents; and to England and France, September, 1916, 448,000,000 pounds at 27 cents. This total of more than 950,000,000 pounds that Great Britain and her allies took from the market, together with what was contracted for by American consumers, left the refineries bare of supplies. For the last three months after the large September sale, copper averaged 31½ cents. Domestic buyers, because of high prices, had allowed stocks on hand to run low, and then with the continuing advance, hesitated to accumulate supplies. During 1916 the market was thus in a feverish speculative condition. In spite of the increase in the output of copper through 1916, the average price of 33.84 cents for the last month of that year proved to be the year's highest monthly average. The discontinuance, in December, by England and France of the publication of statistics of foreign visible supply, and on January 1, 1917, the formal taking over, by their respective governments, of all the English and the French copper stocks, were public acknowledgments of an undeniable world scarcity of copper.

Copper was indeed practically a " cornered " metal. Heavy government buying had to continue, and a change of policy was necessary. The last Anglo-French purchase had been sensational both in its size, and because of its admission that it should be deemed expedient to provide in September so largely for deliveries throughout the following year. While manufactured products, wholly or partly finished, continued to be purchased in record-breaking quantities and at the highest prices, foreign governments thereafter, instead of taking specified amounts of refined copper, bought only from time to time, and at the best possible price, such copper as could be secured from the large producers. It was believed that by the establishment of this new policy the market in the future would not be stimulated by figures of exaggerated totals such as were rumored during the last weeks of 1916. Except on two occasions in 1917, no large sales have since been featured in the trade news.

Tho in the minds of some people the country was tardy in declaring war, it is to the credit of the Administration that the machinery for government direction in marshalling the nation's supplies and in controlling the productive forces was early provided. The United States Council of National Defense, composed of six members of the cabinet, was created by an act of Congress, approved by the President, August 29, 1916. In March, 1917, the council was fully organized and the President appointed an Advisory Commission of seven men expert in various lines. Bernard M. Baruch having special knowledge of minerals and metals, was made chairman of the Committee on Raw Materials, Minerals, and Metals which was created to study and report on all sources and possibilities for securing such materials as were needed by the government. This was not a purchasing committee, but on the 23rd of March, Mr. Baruch announced that a sale had been made to the government of 45,000,000 pounds of copper at 16⅔ cents a pound, for delivery extending over the twelve months from April first. This figure was based on the actual ten-year average of sales made by the United Metals Sellings Company from 1906 to 1916. Since the average price per pound during the first three months of 1917 had been 30.634 cents, there was to the companies accepting this figure an estimated loss of almost $14,000,000. The first annual report of the Council of National Defense, 1917, states that at this period "the market price was about 35 cents." To explain this transaction it should be remembered that a division of opinion as to our nation's attitude toward the war existed throughout the country and was especially marked between the different sections. In the financial circles of the East, there was more nearly an unanimity of opinion as to the necessity for the country's entrance into the great conflict, and this united action of the copper producers was intended as a patriotic demonstration that here was a powerful industry not seeking opportunities for profiteering. Only one of the large companies refused to accept a share in this sale. The price, however, was not justified on any economic principle, since too large a proportion of the nation's output could not be produced for this sum. It is a grave question whether the transaction accomplished what its sponsors desired, and what the companies certainly deserved to achieve by so large a sacrifice.

On the 18th of May, 1917, the Coöperative Committee on Copper was appointed by the Committee on Raw Materials, the members being representative producers of copper, with John D. Ryan as chairman. The purpose of the Coöperative Committee on Copper, which immediately began work, was to supervise the production and the distribution of copper by the private companies for the period of the war, and it was announced that if the committee were successful in its endeavors, the necessity for commandeering the mines for the sake of securing copper to make munitions would be removed. The burden of these tasks, however, was some four months later absorbed by the Copper Producers Committee, and the Non-Ferrous Metals Section of the War Industries Board, and the Coöperative Committee on Copper ceased to be an active agency.

The General Munitions Board of the Council of National Defense was appointed in April, 1917, with a membership of twenty-four, seventeen from the Army and Navy, and seven civilians. In June, it arranged with the approval of the Chief of Ordnance, for the purchase of 60,000,000 pounds of copper at 25 cents, but the transaction was not approved by the War Department. It was clear that the Secretary of War did not wish to assume responsibility for a price of 25 cents, and therefore requested that the issues of profits and costs be determined by the Federal Trade Commission. On July 30, 1917, the General Munitions Board was succeeded by the War Industries Board, composed of eleven members. Its function was to control the production and distribution of all commodities essential to the conduct of the war, giving special attention to the vital war problems relating to raw material, finished products, and priority. Authority was thus given to determine ways and means of creating, as well as of using the industrial agencies of the country, and also power to measure the relative urgency of the different government services. Three of its members were constituted a commission to arrange purchases, except where foodstuffs were involved. One of the duties of the War Industries Board was to fix prices, but later, on March 4, 1918, this power was delegated to a Price-Fixing Committee with Robert S. Brookings of St. Louis as its chairman. This committee was appointed by and reports direct to the President. The membership was limited to nine including the Chairman of the War Industries Board ex officio. Four are civilians, of whom three are members of the War Industries Board and one is the labor representative, while the Army, Navy, Fuel Administration, United States Tariff Commission and the Federal Trade Commission, are each represented by one member. Its duties include not only the passing on prices but the establishing of a price-fixing policy, and the assisting, if desired, of the executive departments in the adjustments of difficulties growing out of price-fixing matters. Prices are determined by the committee after costs as a basis have been reported on by the Federal Trade Commission. But the committee's determination which is final, must have measured not only costs, but also have considered problems of production and distribution as well as profits as they are related to prices.

In the fall of 1917, the I. W. W. strikes in Arizona and Montana seriously crippled these sources of production and accentuated because of shrinking supplies the need of further coöperation in allotting copper. But the immediate cause of the next step in the organization of control was the fixing of the price of copper on September 21, 1917, at 23½ cents. By this act demand and supply as factors were gone, and additional new machinery was needed to control distribution. Seven days later, September 28, 1917, a Copper Producers Committee was organized, and became the controlling and distributing body for the producers. Strikes and operating problems have not been their concern, and no step has been taken by them to increase production. On October 22, the Section on Non-Ferrous Metals — antimony, aluminum, copper, lead, mercury, nickel, and zinc — was appointed with Eugene Meyer, Jr., as chief. In February, 1918, Pope Yeatman succeeded to that title. The Copper Producers Committee became a close interlocking agency with the Priorities Committee and with this section of the War Industries Board to help the government in securing its necessary requirements under the new conditions.

The Copper Producers Committee was named at a meeting where practically all the producers were represented directly or by their selling agents, and thereafter it acted for the industry in dealings with the government. The committee was clearly understood not to be in an advisory relationship to the government, nor was it a legally authorized agent to act for the producers. Two companies, however, became the virtual business and selling agents. The United Metals Selling Company, in connection with the sale to the government in March, of 45,000,000 pounds at 16⅔ cents, had volunteered its assistance to the Coöperative Committee on Copper and accepted the responsibility for allotting to the producers the several amounts, and for distributing the same as received from those who shared in this transaction. It was natural, therefore, that they should volunteer to continue as agents in making the necessary business adjustments between the producing companies and the government in the distribution of supplies in this country. On the other hand, the American Smelting and Refining Company, because of its long experience and its very large export business, voluntarily assumed a similar responsibility between the producers and foreign governments. This service, involving for the companies a considerable increase in their staffs, has continued to be maintained without expense to the government. Because there was not enough copper to meet the demands, all companies were assured orders in their proper proportion, and the right of the committee to act in this capacity for all met with no organized opposition. In case of need, this committee could rely on government duress, so they with confidence pledged the government that they would answer for all producers accepting for their output the government price, when and as fixed. Since their organization, they have successfully carried out the terms of that agreement.

With our entry into the war, the situation had become absolutely taut as regards supply. There was hardly enough copper to meet contract needs, and then only enough through careful coöperation, through the inventorying and watching of supplies, and the gradual calling into use of existing stocks wherever found. Every pound of copper had to be allotted by the careful matching of output with the consumers' needs, and where some particular brand of copper was required by the government, existing contracts were released. The general program for the Army and Navy was growing enormously. The Secretary of War's estimates began at $2,800,000,000, and $3,000,000,000 was provided. But in December $6,000,000,000 more was asked for, and five months later when the bill was passed, the amount was $12,000,000,000. It was natural that government agencies should each for themselves seek to get supplies for their own needs or for the private contracts which each had placed. War uses controlled, and individual ambition for immediate results was allied to patriotism. The inexperience of all concerned in war business, fear of profiteering, and mistrust of business leaders, were further factors that lead inevitably to competitive rivalries and congestion. This brought about marked contrasts — accumulated stocks in one quarter, and starving in extreme want in another. Such were the abnormal and almost panicky conditions in the fall of 1917, requiring supervision and ordered control by the government agencies in coöperation with the Copper Producers Committee.

The agreement between the government and the producers was reached September 21, 1917, when with the approval of the President a price of 23½ cents f.o.b. New York was announced to continue for four months. The advances to the government at this figure during the six months and more from April 7 to September 21 amounted to between ten and fifteen million dollars. For our own government this was the price of its copper from the beginning of the war, while for the Allies and their civilians as well as our own, this price became operative on and after September 21. The Allied Purchasing Commission which was appointed to prevent conflict between foreign government purchases and our own, had on September 6 arranged a sale of 77,000,000 pounds at 25 cents in behalf of England, France, and Italy, and the terms of this sale were not changed. Twenty-five cents had been the lowest price at which the producers had been willing to sell, so 23½ cents was a compromise, since the government's first and lowest counter offer had been 18 cents. With the costs of production as established at the beginning in 1917, this price, unless averaged down by the sale at 16⅔ cents in March, 1917, was too generous to the companies for a similar proportion between costs and profits to be long hoped for or continued. Increased costs, however, soon changed this proportion until now it can be safely contended that for most producers, the profits after taxes are computed, are below the normal for the pre-war period before 1914.

The interval of uncertainty between March 23 and September 21, 1917, as to what would be the final agreement between the government and the private companies as to price and as to the methods of handling future business, largely curtailed new buying except for immediate needs. Deliveries, however, were speeded up so that the large Anglo-French order of September, 1916, the whole planned to provide for the year 1917, was filled by July, and old contracts continued to absorb all available output. Prices dropped to their lowest level, 24½ cents, in July and in August of 1917, with but very little copper changing hands. Nevertheless, the average during the entire interval of delay from April through September was as high as 27.29 cents. The course followed by prices during this period proved conclusively that consumption for a long time had been running at a rate which had exhausted surplus stocks. The 1917 average for nine months through September was 28.4 cents, and this even tho it was well understood that government price-fixing meant lower prices for the metal. The remarkable fact is that the market had been thus stabilized and speculation so largely controlled during a period when producers might have commanded 15, 20 or even 25 per cent more for their copper, if scarcity value had been placed on their output.

In January of 1918, conferences with producers in Washington resulted in the continuance of the existing price until June 1, 1918. The last of May there was a further extension to August 15, to which the producers did not agree. This action of the Price-Fixing Committee was the source of much misunderstanding, as many felt that with the facts in hand as to added costs, the old price should not have been continued for seventy-five days. On the producers' side, some sold their copper under protest, assuming the price was soon to be advanced, and others acted on the belief that the price had been fixed to August 15. The consumers, however, were almost unanimous in their assumption that the price was fixed, and made their contracts accordingly on that basis with the government and with private contractors. On the 2d of July the War Industries Board announced an interim advance to 26 cents for the period from July 2 to August 15, pending the decision for a longer time on or about August 7. Increased costs had definitely accrued through advances in freight rates effective June 25; immediate increases in wages were pending, and necessary adjustments required added money allowances to the refineries. On these facts as presented by the producers and in so far as they could be actually measured, the committee acted, granting a portion of the advance desired, but not the full amount of the added costs. No distinction in price was granted to the so-called high cost producers. Because of the suddeness with which this interim advance was made, there was considerable further confusion within the trade and consequent losses, so that similar action is not likely to be repeated. The analysis of the copper companies and their costs which was made by the Federal Trade Commission and reported to the War Industries Board in July, 1918, has not been given to the public. At the hearing in August, the price fixed was continued at 26 cents to November first. On August 30, the Board ruled that no price was fixed for civilians of Allied countries. As in the case of neutrals however, for them very little copper is available, and indeed no copper can be exported without a government license from the War Trade Board. On October 26, 1918, a virtual agreement announced by the War Industries Board was made effective by the President's approval, continuing the price of 26 cents to January 1, 1918. The *Wall Street Journal* estimated, in September, that with a monthly production of almost 200,000,000 pounds of refined copper, only 5,000,000 pounds or 2½ per cent was then available for uses not directly or indirectly connected with the war, and of this small amount the large proportion was exported. By October, as a result of the plans for the great Spring drive in 1919, and for the equipment of an army of four million and more men for overseas service government demands exceeded all possible production. Price-fixing of copper has thus come to mean for this country practically a price determined by the government to *itself* as the consumer of a commodity, every pound of which is deemed urgently needed for the winning of the war. Priority orders, not advancing prices, are therefore now the effective agencies for securing to the government the necessary product and distributing it so as to meet the nation's needs.

The sequence here developed as to the general principles of price-fixing in the United States, the nature of the particular industry, the uses of its product, and the history of market conditions before and under government control, makes clear the necessity of a price being fixed for copper. A price fixed for any commodity must first be justified as necessary. Then this action must be related to other agencies of government war control so that altogether they may prove wisely coöperative and constructive, if the government is to secure adequate production for the winning of the war. Not necessity alone, but, to use the suggestion in the phrase "quality of mercy," it is the "quality of wisdom " in the exercise of these great powers that is the final test.

As incident, therefore, to the further fixing of a government determined price, war control agencies must continue and do much more work than they have yet done, to secure needed supplies, or even to restore the maximum production of 1916. Besides they must obtain added supplies through the better organization, as well as the increase, of all the factors of production and distribution. Already prices largely affecting copper costs have been determined for coal, coke, steel, and lumber. Still further to control costs, prices may be fixed for other materials as well as for the by-products. The Railroad Administration and the Priority Board by their orders can secure greater swiftness and promptness in deliveries, and this is especially essential as this industry is peculiarly dependent on transportation facilities. For instance, most of the blister copper must be brought from smelters in the West to refineries on the Atlantic seaboard. One large producer estimated that the loss in production for the year 1917 amounted to over 200,000,000 pounds, through coal shortage, railroad congestion, and the I. W. W. strikes. And this includes no measure of loss from temporary shut-downs, intermittency, and inefficiency of labor and its enormous turnover, due both to the competitive bidding in industry and to the high wage scale paid on direct government work.

The registration on September 12th of men between eighteen and forty-five demands new intimacies of coöperation between the government agencies and industry. This last draft inevitably means serious impairment of the nation's output. It will affect copper together with other war necessities, through the withdrawal of workers from essential industries, and through mistakes growing out of the difficulties in assessing the value of individual men to their respective organizations. Men in the draft, if our experience proves similar to England's, may, therefore, actually be sent into military service abroad, only to be called back because found to be more needed in industry than in the trenches. And yet, " to be called back " will for our soldiers mean to be withdrawn from the military into the industrial service in Europe, in order to meet there our own increasing needs, not only to repair equipment, but also to supplement and complete that which we have failed to perfect here.

Labor adjustments under the control of the National Labor Board, and enforced by the President, promise regulations which will minimize the loss of time from labor disputes. Under the United States Employment Service, organized and effective August 1, 1918, there is established a monopoly in the distribution of so-called unskilled workers, which is intended to reduce the waste due to our unprecedented labor turnover. This form of government aid will prove helpful, but a mining industry is not easily recruited from unskilled labor. If copper production is to increase, trained miners must be taken from the poorer and smaller metal mines and allotted to those copper producers who have the greatest capacity per unit of man-power, for the greater proportion of our production comes from a few large mines. One-half of the entire output of copper in this country comes from mines whose production in terms of pounds per man varies from two to six times the average of all the less advantageously worked ore bodies. In 1916, 85.22 per cent was produced by thirty-one mines, and their percentage of the total gain was 90.74 per cent. But under the constitution of our democracy no man can be forced against his will to work, except after being drafted into military service or under threat of losing his rights to exemption. Such constraint will be used to increase efficiency and reduce labor turnovers, and to this end standardization of wages may yet be effected. As these government agencies of control are successful in setting in order the organization and the processes of industry, it is the function of the Price-Fixing Committee to measure the costs, and assure reasonable profits to private interests only so long as their facilities of production are essential, adequate, and efficient, and not wasteful of man-power.

Granted that these government agencies give adequate coöperation in meeting the needs of the industry, there remain three sources of supply which require particular consideration and perhaps special prices for their copper in order to secure adequate production. These are, first, the mines in foreign countries; second, the so-called high cost producers; and, third, ore bodies in this country fully explored but not now being developed. Increases could be secured from foreign sources, if shipping were assured. Chile might continue her annual increases in production — 39,000,000 pounds in 1916 over 1915 — but tonnage is lacking, and for this reason, it was announced in July, 1918, that the plans for doubling the capacity of the Chile Exploration Copper Company were abandoned. Peru's 1916 increase over 1915 was nearly 21,000,000 pounds, but the Cerro-de-Pasco Copper Corporation, the largest mining company in Peru, is at present hampered by lack of ships and its production is decreasing. From Mexico, were conditions normal and a return possible to the same production as in 1912, more than 40,000,000 pounds increase could come, and this in spite of the fact that the 1916 production over 1915 was nearly 54,000,000 pounds. On the other hand, as Japan has been supplementing her own output since 1916 by refining brass coins imported from China, one firm having had a contract for two hundred thousand tons, it is doubtful if Japan can be counted on for much added production. Her increased yield from domestic ores in 1916 over 1915 was 13,000,000 pounds. Countries at a greater distance will hardly prove available for additional supplies in this crisis. But there is a price in excess of the price fixed in this country which it would pay us to offer for copper imported from neutral countries, and so procure the contribution of their labor and capital to satisfy our war needs. This result would justify a bounty for imports or even a charter bonus being given to neutral ships for this trade; or, best of all, our own Shipping Board might provide tonnage.

Increases of importance for our war needs are not now possible from discoveries, nor from recently developed mines. Even from many of the high cost producers the maximum production of 1916 cannot now be recovered unless a special price is made for their product. The normal process of copper mine development in the United States may be briefly summarized as follows: first, discovery and exploration by prospectors; second, development by an enlarged ownership — one of the smelting companies, or some group of men of wealth, taking a large portion, or even acquiring, not a part, but the whole, by purchase; and third, the offer of shares to the public on a speculative basis. In recent years, the successful mining companies, through exploration departments, or by actually creating exploration companies, have used their expert geological engineering staffs, and have examined hundreds of claims brought by the prospector who was welcome if his "specimens" and "showings" were interesting. In the prosperous years 1913 to 1916, the number of copper mines in the

United States increased from five hundred and sixty-three to ten hundred and eleven, or 79.6 per cent. The gain in this period, in the number of mines producing more than 1,000,000 pounds per annum was twenty-six, or 25 per cent. The risks attendant upon these developments are great, and the losses are so numerous that more and more such undertakings have gone forward only with the active aid and the financial help of the large companies. Not one of these, however, would now contract for such a development, and none would at any time accept for consideration an engineer's report that did not promise at least a 20 per cent profit. The Kennecott Copper Company in Alaska absorbed the Braden Copper Company in Chile, and made permanent its interest in copper production by large stock ownership in the Utah Copper Company. Anaconda Copper Company in Montana and its officers own very large interests in the Inspiration Copper Company of Arizona, the Green Cananea Copper Company of Mexico, and the Andes Copper Mining Company in South America. The Chile Exploration Company is controlled by the American Smelting and Refining Company group, while the large owners of Utah Copper have created " Ray " in Arizona and " Chino " in New Mexico.

With such risks to be ventured in the production of copper, and often only under these conditions of co-operation, the general assumption is credible that no price can be fixed at this time which will assure the necessary speculative rewards, subject to taxes, for the development of any considerable output from prospects and small mines. There should be as long as possible some margin of profit for the " going mines " in this classification, because the government in fixing a price to secure production in an essential industry assumes toward such properties a responsibility for at least providing the necessary price level to permit the continuance of the operations of these mines at a minimum cost essential to maintain their existence. Otherwise government action penalizes such companies by compelling them to run at a loss in order to save the capital invested together with some remnant of their organization. Special prices might well insure some continued output, and small supplies, therefore, may be expected from the nine hundred and fourteen mines which in 1916 produced about 50,000,000 pounds, or an average from each mine of approximately 50,000 pounds.

There were in 1916, ninety-seven copper mines producing more than 1,000,000 pounds a year; and of these the output of fifty-five was, for each, less than 5,000,000 pounds. As a unit of measure, each million pounds at a profit of ten cents a pound, without deduction for taxes, nets for a company $100,000. The output of the fifty-five mines probably averaged 2,000,000 pounds, so that this production, if ore in sight continued equal, and an amount for amortization charges were included in the costs, would allow for each mine $200,000 net income, subject to laws for taxation which do not yet take into account the peculiar risks and hazards of mining operations. For these properties, any balance after dividends and taxes will not provide much money for reinvestment in plant development. There remain, therefore, forty-two mines, each with an output of more than 5,000,000 pounds, from which comes more than 90 per cent of the gain in any one year's production. The variation in cost between these large producers over a series of years is about two cents a pound, and for the smaller from two to eight cents. Reasonable adjustments of existing contracts have already been made between the mines, the smelters and the refineries, and the capacity of the smelters and refineries at present requires no increase in order to handle the domestic output and our foreign imports. The vital question, therefore, is what price fixed will afford the assurance necessary to induce these larger copper companies, some of which are high cost and some low cost producers, to increase to the utmost their developed as well as their yet undeveloped, but known, ore bodies ? War is naturally a laggard in its industrial control, consuming accumulated supplies never intended for its use, and allowing production by so much and more to decrease, until essential industry is organized to obey its command for the development of all available sources. The spirit of war, whether its aims are conquest for a dominant place under the sun, or for human freedom and organized peace among the peoples upon the earth, consumes, until the issue is decided, all resources; and always the necessary next steps will be taken for the sake of national safety.

The industry at every stage of production faces high costs, with scarcity and inefficiency of labor cutting down seriously plant per unit output. The result, so far in 1918, is a probable further decrease in supplies of refined copper of 100,000,000 pounds. Since the first announcement of the government determined price, the shares of four of the largest producers have shown, as of July 1, 1918, a shrinkage of about $50,000,000. Present conditions and the excess profits tax do not encourage these larger copper companies to reinvest their earnings, or to raise new capital to increase plant output. In fact, if one were to assume a 5 per cent allowance for amortization and an 80 per cent excess profits tax, an increase of mining capacity at this time would mean for a going mine a waste of principal and of ore reserves, even if no account were taken of extravagant costs of new installations. As a copper mine is a liquidating asset, production and increases must net for its stockholders profits somewhere near the normal average, considering the past and the future, as well as the life of the mine; otherwise the copper deposits will be left undisturbed and production will not increase. Steadily rising costs have thus their retarding effect. Even if a maximum price is once more named and allowed to continue, the industry, which because of government needs must increase its production, will nevertheless soon bring to the War Industries Board the questions of what reasonable mining profits are, and on what capitalization, depreciation, and amortization, the large producers can figure. Not until such questions have been answered can the industry itself be stabilized for purposes of maximum production, nor can the government know whether, under its coöperative control, it can secure through private companies adequate supplies. To this end it is a question whether the prices, first of 23½ cents, and now of 26 cents, have not accomplished all that is possible under existing conditions. The price can be again advanced as far as necessary to assure reasonable profits, but hardly far enough to secure adequate production. Detailed prices affecting different stages can be determined; or both a maximum and minimum price established for a definitely long period of time; or the possibility of speculative profits can be restored by providing that increased production above any one mine's best maximum shall be free from " excess profits " taxation during the war. Too much of uncertainty and too precarious a business risk even then exists, and especially so with judgment and action dependent upon the duration of the war, on present high costs, and on the possible changes in economic and social conditions after the war. There remains the possibility of government coöperation in enlarging at once the facilities of production in some of the mines of lowest cost per unit of man-power, and in the end and only as a last resort, the actual commandeering of the mines. With the copper industry so highly centralized and also its large capitalized wealth, government control has so far proved easily effective. It has had to use only the compulsion of motives of self-interest, and yet on the producers' side it has been shown that more than this minimum response has been given. Since price-fixing began, the whole trade readjustment has been made with such exceptional smoothness, and has been withal so efficiently managed, that it will prove difficult, as well as a solution of doubtful expediency, to lessen the efficiency of the present established unity of control, especially if it is in any way to break up this complicated organization as already established.

Whatever may be the probabilities as to successive price determination in the future, and admitting that the increase over pre-war prices for copper has been 85 per cent as against larger increases in other products, the War Industries Board is, nevertheless, assured that the producers are giving their best and most loyal endeavor in spite of the uncertain economic conditions. Since our entry into the war no charge of profiteering has been justified against the copper industry, and government direction and coöperation have proved absolutely essential. Government price-fixing carries with it the responsibility for a system of distribution, the assurance to capital of a return, however temporarily reduced by taxation, and the prevention of strikes through adjustment of labor demands. Ultimately, the government must give its help in controlling high costs, so that an adequate production may be secured and victory won. For these ends our democratic government has found it necessary to delegate to its representatives, a few men chosen by the President, these great quasijudicial powers over the nation's industrial life, and while the Price-Fixing Committee has thus far exercised its authority only by fixing a maximum price for refined copper, its continued responsibility and the assured coöperation of patriotic endeavor within the industry will guarantee that the supply of copper shall not fail in meeting the war needs of our own government and of the Allies.

LEWIS KENNEDY MORSE.